

2671

TRANSMITTAL OF INFORMATION DISCLOSURE STATEMENT

(Under 37 CFR 1.97(b) or 1.97(c))

Docket No.
13701

In Re Application Of: John Oliensis

#2

Serial No.
09/653,023

Filing Date
September 1, 2000

Examiner
Unassigned

Group Art Unit
2671

Title: STRUCTURE FROM MOTION USING POINTS, LINES AND INTENSITIES



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Address to:

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Washington, D.C. 20231

37 CFR 1.97(b)

1. ☒ The Information Disclosure Statement submitted herewith is being filed within three months of the filing of a national application; within three months of the date of entry of the national stage as set forth in 37 CFR 1.491 in an international application; or before the mailing date of a first Office Action on the merits, whichever event occurs last.

37 CFR 1.97(c)

2. ☐ The Information Disclosure Statement submitted herewith is being filed after three months of the filing of a national application, or the date of entry of the national stage as set forth in 37 CFR 1.491 in an international application; or after the mailing date of a first Office Action on the merits, whichever occurred last but before the mailing date of either:

1. a Final Action under 37 CFR 1.113, or
 2. a Notice of Allowance under 37 CFR 1.311,
- whichever occurs first.

Also submitted herewith is:

- ☐ a certification as specified in 37 CFR 1.97(e);

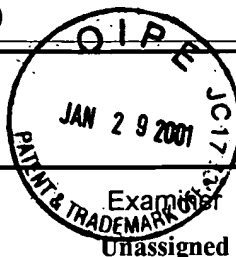
OR

- ☐ the fee set forth in 37 CFR 1.17(p) for submission of an Information Disclosure Statement under 37 CFR 1.97(c).

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Paul J. Esatto, Jr.
Registration No. 30,749

Scully, Scott, Murphy & Presser
400 Garden City Plaza
Garden City, NY 11530
(516) 742-4343

Dated: **January 26, 2001**

PJE:dra

CC:

TRANSMITTAL OF INFORMATION DISCLOSURE STATEMENT

(Under 37 CFR 1.97(b) or 1.97(c))

Docket No.

13701

In Re Application Of: John Oliensis

Serial No.

09/653,023

Filing Date

September 1, 2000

Primary Examiner

Unassigned

Group Art Unit

2671

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Assistant Commissioner for Patents
Washington, D.C. 20231**37 CFR 1.97(b)**

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37 CFR 1.97(c)

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09/653,023

Filing Date
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Examining
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Group Art Unit
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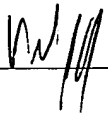
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Signature

Paul J. Esatto, Jr.
Registration No. 30,749

Scully, Scott, Murphy & Presser
400 Garden City Plaza
Garden City, NY 11530
(516) 742-4343

Dated: January 26, 2001

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: John Oliensis **Docket:** 13701
Serial No.: 09/653,023 **Group Art Unit:** 2671
Filed: September 1, 2000 **Dated:** January 26, 2001
For: STRUCTURE FROM MOTION USING
POINTS, LINES AND INTENSITIES

Assistant Commissioner for Patents
Washington, D.C. 20231

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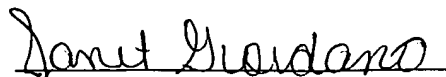
In accordance with 37 C.F.R. §§ 1.97 and 1.98, it is requested that the following references, which are also listed on the attached Form PTO-1449, be made of record in the above-identified case.

1. Astrom et al., "Structure and Motion From Lines Under Affine Projections," *IEEE*, pages 285-292, 1999;
2. Azarbayejani et al., "Recursive Estimation of Motion, Structure, and Focal Length," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Vol. 17, No. 6, pages 562-575, 1995;

CERTIFICATE OF MAILING UNDER 37 C.F.R. ' 1.8(a)

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Dated: January 26, 2001


Janet Giordano

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3. Bergen et al., "Hierarchical Model-Based Motion Estimation," *ECCV*, pages 237-252, 1992;
4. Burt et al., "The Laplacian Pyramid as a Compact Image Code," *IEEE Transactions on Communications*, Vol. COM-31, No. 4, pages 532-540, 1983;
5. Fermuller et al., "On the Geometry of Visual Correspondence," *International Journal of Computer Vision*, Vol. 21, No. 3, pages 223-247, 1997;
6. Fermuller et al., "Direct Motion Perception," in *Visual Navigation*, pages 135-177, 1997;
7. Fermuller et al., "Qualitative Egomotion," *International Journal of Computer Vision*, Vol. 15, pages 7-29, 1995;
8. Fermuller, "Passive Navigation as a Pattern Recognition Problem," *International Journal of Computer Vision*, Vol. 14, pages 147-158, 1995;
9. Fermuller et al., "Direct Perception of Three-Dimensional Motion from Patterns of Visual Motion," *Science*, Vol. 270, pages 1973-1976, 1995;
10. Hanna, "Direct multi-resolution estimation of ego-motion and structure from motion," *IEEE Motion Workshop*, pages 156-162, 1991;
11. Harris et al., "3D positional integration from image sequences," *IVC*, vol. 6, no. 2, pages 87-90, 1988;
12. Hartley, "Lines and Points in Three Views and the Trifocal Tensor," *IJCV*, pages 1-24, 1997;
13. Hartley, "In Defense of the Eight-Point Algorithm," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Vol. 19, No. 6, pages 580-593, 1997;
14. Holt et al., "Number of Solutions for Motion and Structure from Multiple Frame Correspondence," *International Journal of Computer Vision*, Vol. 23, No. 1, pages 5-15, 1997;

15. Holt et al., "Uniqueness of Solutions to Structure and Motion from Combinations of Point and Line Correspondences," *Journal of Visual Communication and Image Representation*, Vol. 7, No. 2, pages 126-136, 1996;
16. Horn et al., "Direct Methods for Recovering Motion," *International Journal of Computer Vision*, Vol. 2, pages 51-76, 1988;
17. Horn et al., "Determining Optical Flow," *Artificial Intelligence*, pages 185-203, 1981;
18. Irani, "Multi-Frame Optical Flow Estimation Using Subspace Constraints," *IEEE*, 1999;
19. Irani et al., "Recovery of Ego-Motion Using Region Alignment," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Vol. 19, No. 3, pages 268-272, 1997;
20. Jepson et al., "Linear Subspace Methods for Recovering Translational Direction," in *Spatial Vision in Humans and Robots*, Cambridge University Press, pages 39-62, 1993;
21. Lucas et al., "An Iterative Image Registration Technique with an Application to Stereo Vision," *Proceedings of the Seventh International Joint Conference on Artificial Intelligence*, Vol. II, pages 674-679, 1981;
22. Mitiche et al., "Counting Straight Lines," *Computer Vision, Graphics, and Image Processing*, Vol. 47, pages 353-360, 1989;
23. Morris et al., "A Unified Factorization Algorithm for Points, Line Segments and Planes with Uncertainty Models," *ICCV*, pages 696-702, 1998;
24. Oliensis, "Direct Multi-Frame Structure from Motion for Hand-Held Cameras (1372)", NECI Technical Report, 1999;
25. Oliensis, "A Multi-Frame Structure-from-Motion Algorithm under Perspective Projection," *International Journal of Computer Vision*, Vol. 34, pages 163-192, 1999;
26. Oliensis et al., "Fast Algorithms for Projective Multi-Frame Structure from Motion," *IEEE*, pages 536-543, 1999;

- ✓ 27. Oliensis, "Computing the Camera Heading from Multiple Frames," *IEEE*, pages 203-210, 1998;
28. Oliensis, "Structure from Linear or Planar Motions," *IEEE*, pages 335-342, 1996;
29. Oliensis, "Rigorous Bounds for Two-Frame Structure from Motion," *ECCV*, pages 184-195, 1996;
30. Quan et al., "Affine Structure from Line Correspondences with Uncalibrated Affine Cameras," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Vol. 19, No. 8, pages 834-845, 1997;
- ✓ 31. Salari et al., "A Method to Calculate the Structure and Motion Parameters From Line Correspondences," *Pattern Recognition*, Vol. 23, No. 6, pages 553-561, 1990;
- ✓ 32. Soatto et al., "Reducing "Structure From Motion": A General Framework for Dynamic Vision Part 1: Modeling", *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Vol. 20, No. 9, pages 933-942, 1998;
- ✓ 33. Spetsakis, "A Linear Algorithm for Point and Line-Based Structure from Motion," *CVGIP: Image Understanding*, Vol. 56, No. 2, pages 23-241, 1992;
- ✓ 34. Spetsakis et al., "Structure from Motion Using Line Correspondences," *International Journal of Computer Vision*, Vol. 4, pages 171-183, 1990;
- ✓ 35. Stein et al., "Model-based Brightness Constraints: on Direct Estimation of Structure and Motion," *IEEE*, pages 400-406, 1997;
- ✓ 36. Sturm et al., "A Factorization Based Algorithm for Multi-Image Projective Structure and Motion," *4th European Conference on Computer Vision*, pages 709-720, 1996;
- ✓ 37. Taylor et al., "Structure and Motion from Line Segments in Multiple Images," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Vol. 17, No. 11, pages 1021-1032, 1995;
- ✓ 38. Tomasi et al., "Shape and Motion from Image Streams under Orthography: a Factorization Method," *International Journal of Computer Vision*, Vol. 9, pages 137-154, 1992;

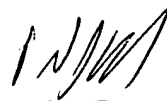
39. Torr et al., "Maintaining Multiple Motion Model Hypotheses Over Many Views to Recover Matching and Structure," *ICCV*, pages 485-491, 1998;
40. Triggs, "Factorization Methods for Projective Structure and Motion," *IEEE*, pages 845-851, 1996;
41. Weng et al., "Optimal Motion and Structure Estimation," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Vol. 15, No. 9, pages 864-884, 1993;
42. Weng et al., "Estimating Motion and Structure from Line Matches: Performance Obtained and Beyond," *IEEE*, pages 168-172, 1990;
43. Weng et al., "Motion and Structure from Two Perspective Views: Algorithms, Error Analysis, and Error Estimation," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Vol. 11, No. 5, pages 451-476, 1989;
44. Zelnik-Manor et al., "Multi-Frame Alignment of Planes," *CVPR*, pages 151-156, 1999;
45. Torr, "Geometric Motion Segmentation and Model Selection," *Phil. Trans. R. Soc. London A*, pages 1-17, 1996;
46. Torr, "Model Selection for Two View Geometry: A Review," Microsoft Research paper;
47. Zelnik-Manor et al., "Multi-View Subspace Constraints on Homographies," *IEEE*, 1999;
48. Kumar et al., "Shape recovery from multiple views: a parallax based approach," David Sarnoff Research Center, pages 947-955;
49. Stein et al., "Model-based Brightness Constraints: on Direct Estimation of Structure and Motion."
50. Hartley, "A linear method for reconstruction from lines and points," GE-Corporate Research and Development;
51. Hanna et al., "Combining Stereo and Motion Analysis for Direct Estimation of Scene Structure," *IEEE*, pages 357-365, 1993;

- ✓ 52. Cohen, "Dense Recovery of Planar-Parallax from Multiple Frames,"
Thesis for the M.Sc. Degree of Meir Cohen, Weizmann Institute of
Science, 1999;
53. Lucas et al., "Optical Navigation by the Method of Differences,"
✓ Computer Science Department of Carnegie-Mellon University; and
54. Fermuller et al., "Global rigidity constraints in image displacement
✓ fields," *IEEE*, pages 245-250, 1995.

Applicant is submitting copies of the above-cited references.

Inasmuch as this Information Disclosure Statement is being submitted in
accordance with the schedule set out in 37 C.F.R§1.97(b), no petition, certification or fee
is required. Consideration of this Information Disclosure Statement is respectfully
requested.

Respectfully submitted,



Paul J. Esatto, Jr.
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